



Big thank you to Diana Nucera,  
Oxbow, and my fellow Conversations  
in Practice friends..

Full of inspiration and gratitude.

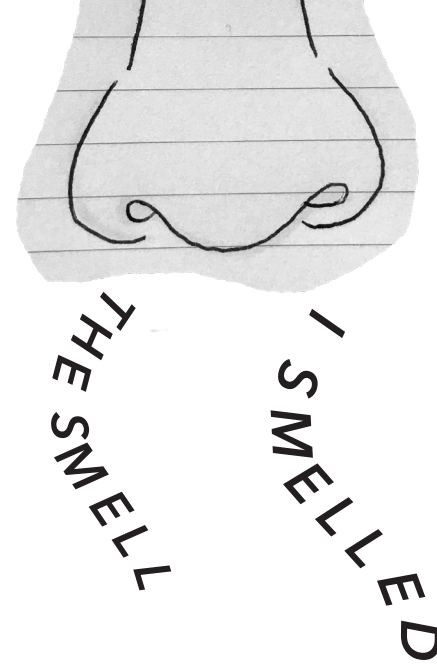
(I'm going to teach you how to process 35 mm black and white negatives in your kitchen sink.)



*But first, some origin stories*

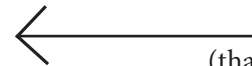
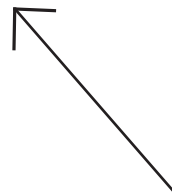
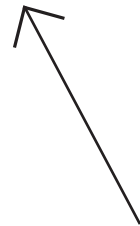


*WITH LOVE, CHERILYN KURTZ*



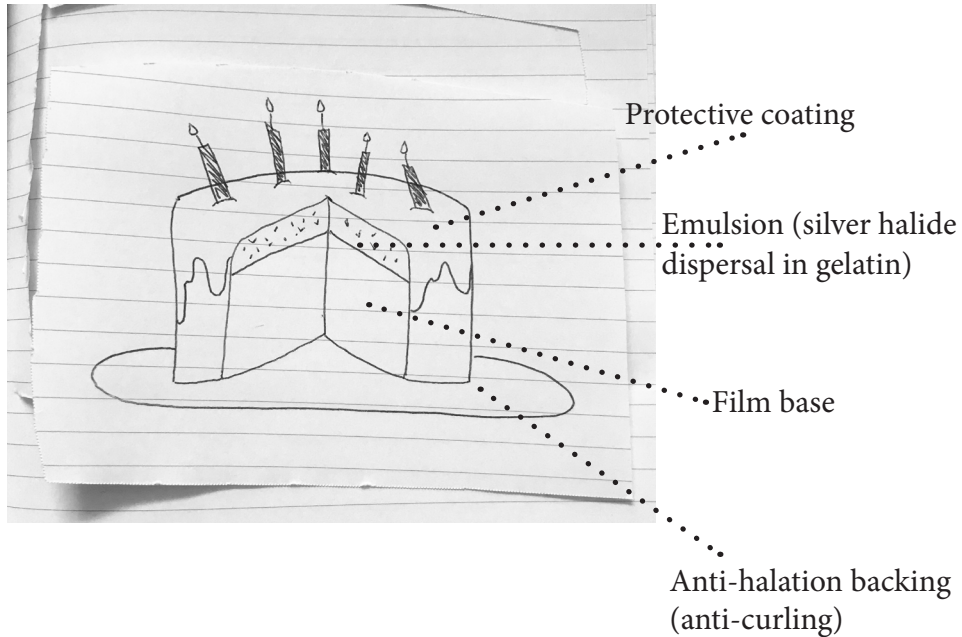
I was alone with my mother's Pentax K1000 in a pitch dark loading closet. My undergrad professor was on the other side of the door for moral support. I removed the rewind film from the back of the camera and pried the top of the canister off with a can opener—my hands sweaty from nerves. Once the negatives were out, I cut a clean edge and began gently nudging it through the plastic reel. I remember that day 14 years ago vividly. The smell of the negatives. The sound as they looped themselves around the reel, afraid I was crushing them. Several minutes to seemingly hours later, I emerged. They were safe in the tank and ready for the best part.

According to PetaPixel, the chemical smell is a good indicator as to which roll should be processed first. After film is exposed this chemical smell is strongest. The longer the film waits to be processed, the more the smell fades. Of course you could just get in the habit of labeling.

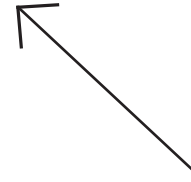


(that film must have been pretty fresh.)

# THE LAYERS OF 35MM BLACK AND WHITE FILM AS A CAKE



(but don't eat it.) (please.)



Some people wear cotton or latex gloves while loading to avoid sweat and oily finger prints. Others use their bare hands. Just be sure to handle the edge of the «perfs» or sprockets while loading the film on the reel.



(cotton gloves, not severed hands.)

Lastly, **SOUND**

if you hear a crunch, it's best to pull the film  
off the reel and start over.

Film is tough but delicate, it will show a dent  
or scratch.



## WHAT YOU'LL FIND

EQUIPMENT & CHEMISTRY

LOADING FILM

DEVELOPING

PROBLEM SOLVING

I'm glad you are here. I worked obsessively with analog film for years. After the birth of my first child, I could no longer spend hours at the lab. Nor is it a place for a newborn. I can hear the mom-shaming now and rightfully so.

In 2015 my husband and I opened a multi-functional artist space on the second floor of our home. Equipped with a kitchen—the perfect place to set up a collapsible darkroom. Much to my relief, my little babe figured out the magic of daytime napping. During these ever fluctuating chunks of time, I made pictures and processed negatives.

When putting this zine together I thought about the artist as new parent. I thought about my Spring 2020 undergrad students unable to take their first darkroom class in the Fall—due of course to the pandemic. I thought about our mail carrier, new to film, asking about my camera and home darkroom.

And if you aren't any of these things, welcome! Maybe you are looking for a more economical alternative to sending rolls to a lab. Or maybe you want the experience I had processing my very first roll of film. The smell, touch and sound—the physicality of making photographs outside the swell of a digital space. The slow, sweet meditation of processing your own negatives.

# SAFETY

*PLASTIC GLOVES* that aren't single use. Think those green thick chemist ones that go up your forearm. If not, I have purchased single use biodegradable gloves that hold up just fine.



*GOOGLES* and perhaps  
just for mixing, a respirator  
*MASK.*

# EQUIPMENT

*CHANGING BAG/DARK CLOSET/UNDER A  
PILE OF BLANKETS (1)*

*DEVELOPING TANK WITH 2 REELS (2)*

*CAN OPENER (3)*

*SCISSORS (3)*

*THERMOMETER (I use a meat thermometer (3))*

*12X16" DEVELOPING TRAY (4)*

*32OZ BEAKER/CYLINDER (5)*

*10 500ML GLASS BEAKERS (med lab supply, 3.15e (5))*

optional, you could use mugs, pints. Just don't use them to drink from  
afterwards (;

*TIMER OR PHONE*

*CHEMISTRY! (6)*

*FILM CLIPS/CLOTHESPINS (7)*

*RAGS (7)*

*STORAGE FOR MIXED CHEMISTRY (8)*

*GLASS STORAGE FOR USED CHEMISTRY*

*ARCHIVAL 35MM FILM SLEEVES (9)*

*ARCHIVAL BINDER (9)*



# VISUALS



1.



2.



7.



8.



3.



4.



9.



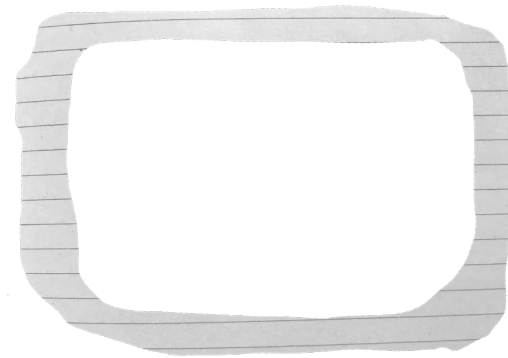
10. (Storage for 500ml beakers)



5.



6.



11. Not pictured, large opaque plastic bin for 1-8 <3

# CHEMISTRY

Pictured (6) is Sprint chemistry with a little left over Ilford. I purchased Ilford chemistry at the start of the pandemic. I had never worked with their chemistry before and was curious if it would better suit my go-to film, Ilford Delta 400. Truthfully, I'm not sure I noticed a huge difference. I went back to Sprint after finishing Ilford's developer and fix.

Do some searching. What is your favorite black and white film and what might the best chemistry be? If you are unsure, Sprint and Kodak are great places to start. Let's talk about what you will need. Most systems require seven steps, five of which you will purchase. They will be used in the following order:

## *PRE-WASH*

(some brands like Ilford, don't require this step)

## *DEVELOPER*

## *STOP BATH*

## *FIXER*

(if using Sprint you will also need to purchase the hardening agent)

## *FIX REMOVER*

## *FINAL WASH*

## *PHOTO FLO*

WHAT IS HAPPENING???

*PRE-WASH:* According to Digital Truth, the pre-wash softens the emulsion for a more even absorption for the developer.

*DEVELOPER:* Converts the latent image to a visible one.

*STOP BATH:* Precisely what you think it does, stops the developing process. To minimize chemical use, omit this step and rinse for, lets say, 3 minutes.

*FIXER:* A la Wiki, "the fixer stabilizes the image, removing the unexposed silver halide remaining on the film, leaving behind the reduced metallic silver that forms the image."

*FIX REMOVER:* Shortens the final wash and removes any contaminants to promote archival permanence. \*You can choose to forgo this step, just be sure to extend your final wash to 10-15min.

*FINAL WASH:* Gets all the chemistry off!

*PHOTO FLO:* Reduces water spots as the film dries.

# IMPORTANT NOTES

- 1.) *DEVELOPER* is one and done. Neutralize it with hot and cold water when dumping. You can also mix it with a little stop bath.
- 2.) *STOP BATH* can be reused. Most change color once it has been exhausted—from a bright yellow to purple shade. Neutralize it with hot and cold water when disposing or again, mix with a little developer. They cancel each other out.
- 3.) *FIX NEVER* goes down the drain. It can also be reused. Check the bottle for approximate roll usage per fix batch and adjusted times. You can also purchase Hypo-Check. If the droplets change from clear to a white cloud when placed in the fix, it has gone bad. Leslie Lazenby author of *Disposing of Photographic Chemistry After Exhaustion* from [filmphotographyproject.com](http://filmphotographyproject.com), lists the ways in which fixer can be disposed. Remember used fixer has silver in it!
- 4.) *FIX REMOVER* is reusable. Sprint's fix remover will turn from a light blue to clear once it has been exhausted. Neutralize with hot and cold water. Notice a pattern?
- 5.) *PHOTO FLO* is essentially watered down soap. It's cheap and one unmixed bottle will last you forever. It can be reused but will eventually attract mold.

(Label your bottles!)

# MIXING

This is where the 32oz cylinder (5) comes in! For explaining purposes we will use Sprint as our chemistry and Ilford Delta 400 as our film. On each bottle there will be mixing instructions. Sprint developer for example will yield 1000ml of working solution. If you are processing two rolls of film at once you will only need 600-700ml. This is where your airtight chemistry storage (8) comes in handy. I typically mix only a few batches at a time because the chemistry will go bad.

If you plan on processing your negatives the day you mix your chemistry, use the thermometer. The range of safe temperature for black and white film is 68-75 degrees. It is best to get as close as possible when mixing to avoid waiting for the chemistry to cool as desired. The colder the developer, the longer the developing time. I process at 68 out of habit and suffer the eleven minute and 30 seconds the film spends in Sprint developer.

This is also where a large opaque storage container is helpful. I don't want my collapsible darkroom to live anywhere near my child, food or dishes. Each time I process I haul the big plastic bin down from our attic/storage/office space. It is best if this place is somewhat temperature controlled.

## ***Let's practice loading the film,***

to avoid sweaty hands and crunchy film later.



***STEP 0:*** Find a roll of expired film. Black and white or color. If you don't have one, I'm sorry, you will have to expose an unexposed roll of film.

***STEP 1:*** Using the can opener pry open the canister of film. It may take a few tries, that's okay. You may also notice that one side of the canister or can opener seems to work better. Also, use some muscle.

***STEP 2:*** Remove the top completely and carefully slide the film out. Be sure not to handle it too much.

***STEP 3:*** Feel for the film leader, this is what helps you load the film into your camera. Once you've found it, grab your scissors and cut a straight edge.

***STEP 4:*** Depending on your reel, where to load may be easier or harder to find. Look for the black beads and a lip on the plastic. Feed the film through.

***STEP 5:*** Pull the now trimmed leader through with your finger and thumb. It should only move a few inches.

***STEP 6:*** Holding the outside of the reel, alternate moving each side.

***STEP 7:*** Back and forth, like this.

***STEP 8:*** You're loading! If the film gets stuck in the process, start over.

***STEP 9:*** Trim the end of the film, removing the little black thing.

(\*It's winter. My hands are dry and I forgot to moisturize.)



1.



2.



7.



8.



3.



4.



9.



10.

11.

(step 10 and 11: It should look like this <3)



5.



6.

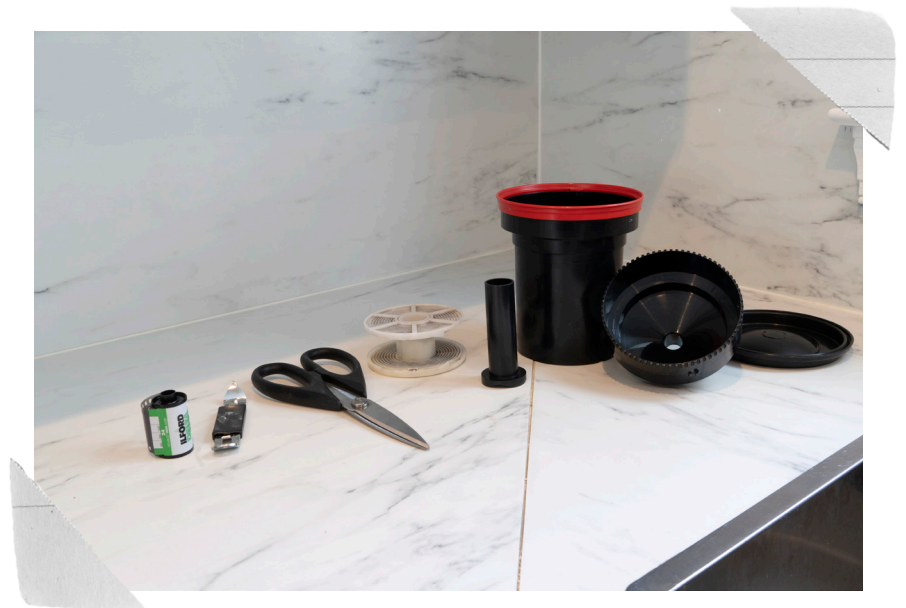
***Keep practicing until you are comfortable!***

Also,

all of this does not have to happen in one day.  
Maybe you master loading film first, then  
mixing and pick a day to develop.

## LEARN THE LINE-UP

All in our magical changing bag, you will load the film onto the reel(s) and place it(them) in the safety of the light-proof tank. Someday, if you find yourself in a lab changing room, you'll have a bit more space to line things up. However, it is still a good practice to treat the process like an assembly line. With your exposed practice reel, run through from loading the reel to closing the lid—until you are familiar with how everything feels and sounds. It will help you know what to grab once everything is thrown into the changing bag. Remember, light is the enemy. Make sure the bag is tight around your arms (it will be) and every piece of the puzzle is there.



***ARE YOU READY??***

!

!

!

!

!

# CLEAN AND PREP YOUR KITCHEN

*How cold is the tap water? Pick a quickly achievable temp between 68-75.*



(You may have already prepped and played with temperature if you mixed the chemistry day of. Here the 500ml glass containers are filled with water.)

*Check the developing time chart according to film and developer type.*

(One can be found Online with a simple Google search or like Sprint, will come with the chemistry you've purchased.)

## STANDARD B&W FILM DEVELOPER

RECOMMENDED TIME + TEMPERATURE BASED ON FILM TYPE

FILM TYPE		TEMP / TIME (min.)				
		20.0°C 68.0°F	21.0°C 70.0°F	22.0°C 71.5°F	23.0°C 73.5°F	24.0°C 75.0°F
<b>Forte / J&amp;C</b>						
Fortepan 100	M	7:30	6:45	6:00	5:30	5:00
Fortepan 200	O	10:00	9:00	8:00	7:15	6:30
Fortepan 400	R	15:00	13:30	12:30	11:00	10:00
<b>Ilford</b>						
PanF+	N	8:30	7:45	7:00	6:15	5:30
FP4+	N	8:30	7:45	7:00	6:15	5:30
HP5+	O	10:00	9:00	8:00	7:15	6:30
Delta 100	N	8:30	7:45	7:00	6:15	5:30
Delta 400	P	11:30	10:15	9:15	8:30	7:30
Delta 3200*	S	17:00	15:00	14:00	12:30	11:15
SFX200	O	10:00	9:00	8:00	7:15	6:30
<b>Kodak</b>						
125PX	N	8:30	7:45	7:00	6:15	5:30
400TX	O	10:00	9:00	8:00	7:15	6:30
100TMX	O	10:00	9:00	8:00	7:15	6:30
400TMY	P	11:30	10:15	9:15	8:30	7:30
320TMZ*	S	17:00	15:00	14:00	12:30	11:15
320TXP	N	8:30	7:45	7:00	6:15	5:30
Infrared (HSI)*	P	11:30	10:15	9:15	8:30	7:30
Eastman Double-X	O	10:00	9:00	8:00	7:15	6:30
<b>Maco</b>						
UP 25+**	J	5:00	4:30	4:00	3:40	3:18
UP 100+	O	10:00	9:00	8:00	7:15	6:30
UP 400+	O	10:00	9:00	8:00	7:15	6:30
Maco Cube 400	R	15:00	13:30	12:30	11:00	10:00

**SPECIAL PROCESSING INSTRUCTIONS:**  
 \* When using these films, use STANDARD concentrate diluted 2:8 at 24°C / 75°F.  
 \*\* When using these films, agitate continuously for the first 15 seconds, then one inversion each minute thereafter.

**CHART LETTERS**  
 If your desired working temperature does not appear on this chart, you may use Sprint's Chart Letter System to determine the development time for your film. To use this system, visit [www.sprintsystems.com/filmchartexp.htm](http://www.sprintsystems.com/filmchartexp.htm)

**CAPACITY**  
 One liter of STANDARD concentrate will make 10 liters of working solution - enough to develop at least 50 rolls of 35mm 36 exposure film, or enough replenished solution to develop 110 rolls.



# SPRINT DEVELOPER + ILFORD DELTA 400

(Our demo pairing of choice)

**STEP 1:** Pre-wash aka water. It will be the same temp as your developer. For now, the painful 68 degrees. I typically use the 32oz cylinder for pre-wash. Once it is to temp, open the lid and pour it in! Don't worry, if all the pieces are there, no light will get to the film. For one minute gently rotate and spin the tank. After one minute, dump. \*A note on timing. Once all of the water or chemistry is in the tank start the timer. Begin pouring out the water or solution 10 seconds before the timer ends.

**STEP 2:** The developer in your temp regulated bath should also be at 68 degrees. Be sure not to raise or lower the bath's temp too drastically. I know it's hard to be patient sometimes but go slowly. At 68 degrees the developer will be in the tank for 11 minutes and 30 seconds. For the first 30 seconds *GENTLY* rotate the tank. I like to hold each end of the tank with my hands, turning and spinning as if I am summoning an image from a crystal ball. After the first 30 seconds, tap the tank on the edge or bottom of the sink to pop any bubbles that may have formed inside the tank. Let it rest for another 30 seconds. We are now a minute into the 11 minutes and 30 seconds. After the rest, rotate the tank for 5 seconds, tap and let rest for another 30. Repeat the rotate for 5, tap, 30 second rest until the time is up. Dump the developer and neutralize with hot and cold water or a little stop.

**STEP 3:** Quickly! Pour the stop bath into the tank. Developer chemistry will keep working on your negatives until it is told to stop—by stop bath. Sprint stop bath spends 1-3 minutes in the tank, with constant rotating for the first minute. Commonly called agitation. For the remaining time agitate 5, tap, 30 second rest and repeat. Save it by pouring it back into your storage container.



1.) Track the temp of the bath. Use ice cubes if the tap water didn't get cold enough but go slow, adding as needed. Or have cold water available to you in the fridge. Arrange chemistry in the order it will be used. From left to right: developer, stop, fix, fix remover. 2.) Track the temp of the developer. The pre-wash (not pictured) should match whatever temp you choose for the developer (stop, fix, etc).

**STEP 4:** Now its time for the fixer. I am assuming you are wearing your plastic gloves and protective eye wear. Great! Fix is the toxic one of the bunch. It will spend 5 minutes in the tank. Rotate (or agitate) for the first full minute. After one minute, tap the tank on the sink and let it rest for 30 seconds. Repeat the same trio as the stop and developer. Rotate for 5 seconds, tap and rest for 30. After the 5 minutes DO NOT dump it down the drain. Remember, it can be reused. When it is exhausted, it will go in a container for silver recovery—perhaps using a method from Leslie Lazen’s Disposing of Photographic Chemistry After Exhaustion from filmphotographyproject.com.

**STEP 5:** I picked up a habit of doing an extra rinse with tap water here. Cold not hot but also not temp specific. I fill, rotate, dump and refill for 3 minutes.

**STEP 6:** Fix remover! The lightish blue stuff. Pour it into the tank and agitate for fifteen seconds. Tap and let rest for 1-3 minutes. Reuse until the solution turns clear. Dilute when dumping.

**STEP 7:** Final wash! At this point remove the lid and the black funnel. Pull the film out and remove the center tube thing. Placing the film back in the tank, run cold water directly from the faucet through the middle of the reels. Let the water run and refill for 5 minutes. (Water preservation. At this point you have no need for the tray/tub of water. Use it during this 5 minute wash.)

**STEP 8:** Photo Flo. Using one of the clean/rinsed 500ml glass beakers measure 200ml of cold water for 1 roll, 400ml for 2. If you have a scale, amazing. You can measure 200 or 400 grams of water on the scale. Carefully add 1 gram of photo flo for 200 and 2 grams for 400. It is a 1:200 ratio.

Very wild but you don’t want too many suds. If you don’t have a scale, eyeball a few drops or use an actual eye dropper.

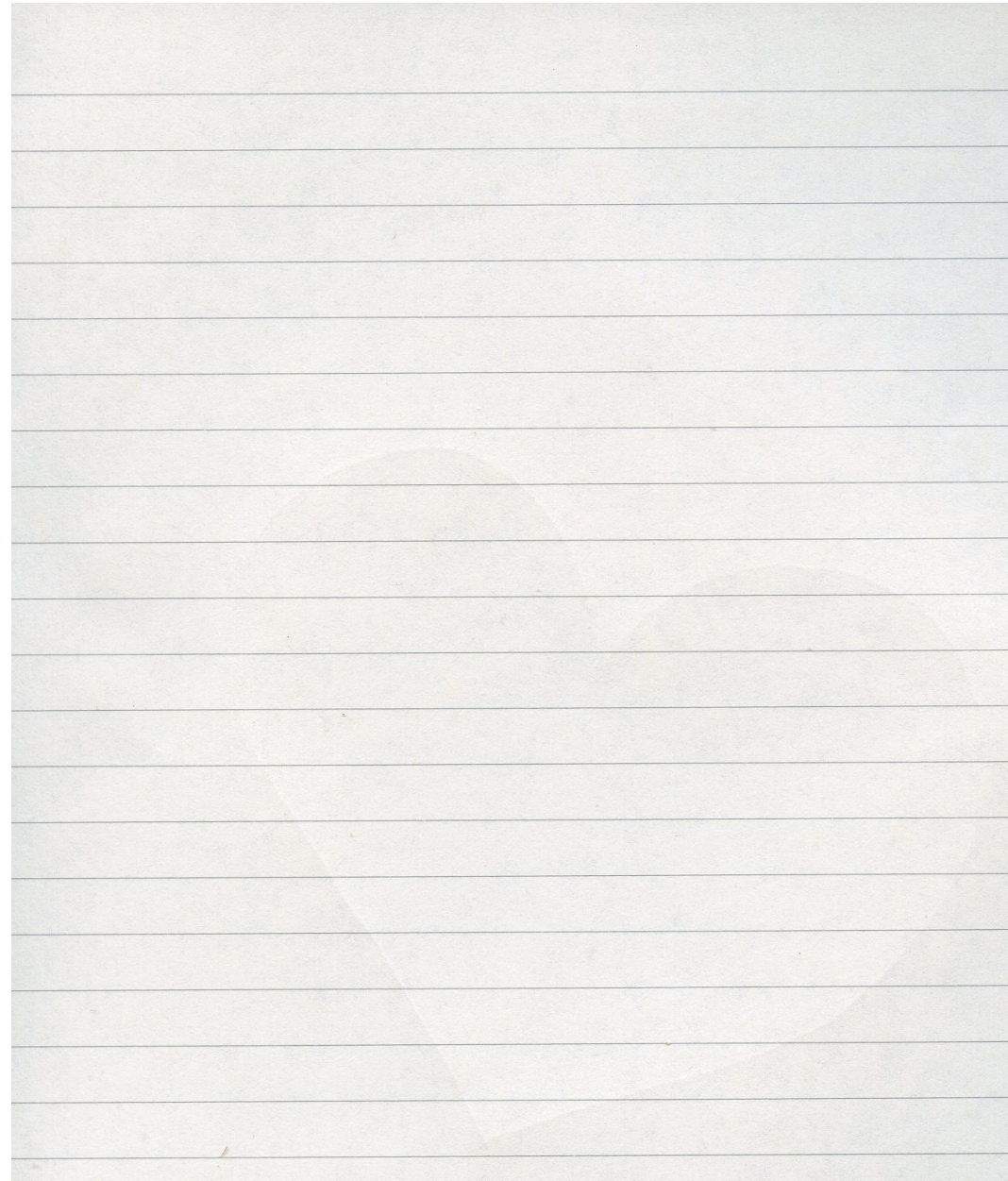
**STEP 9:** Take the film from the photo flo and with your pointer and middle finger squeegee excess water from the negatives. Pick one end, squeegee top to bottom. Then grab the opposite end and squeegee one more time. Don’t go crazy. If your fingers start getting stuck, you’ve done too much squeegeeing.

**STEP 10:** Grab two film clips and snap one on the top and the other on the bottom! Hang to dry in your bathroom, dangling from your shower curtain rod like this:



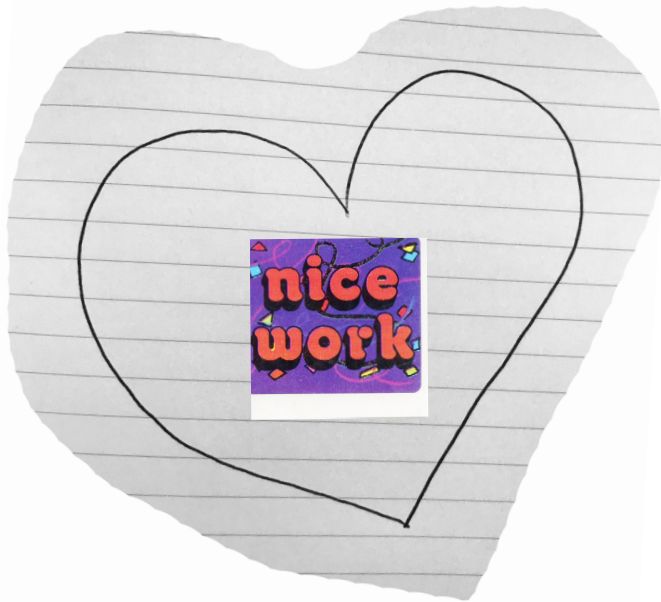
While you are waiting for the film to dry, clean up. Take notes. When was the chemistry mixed? Put a label directly on the containers. What temp did you use? How long was the developing time? What film was it? Etc. How did it go? How did it feel? Write that here:

(Now don't let anyone use the bathroom for the next few hours.  
You are the exception of course.)



It's been a few hours and your film is dry! YES! Cut it by 5 frames and place them in the archival sleeves. Label them with whatever info you'd like for organization and put them in the binder. Because,

# ***YOU DID IT!!!!!!***



**!!!**

(Please enjoy this vintage affirmation sticker. I bought a bunch from a former school teacher not knowing how I'd use them. This feels right.)

**Okay, maybe the negatives  
don't look great.**

It happens. To me too, still, after 10 years of practice. Also remember, film is not digital, it is not perfect. Film is full of special surprises. Though here is how you might problem solve:

### *NEGATIVES ARE DARK*

1. If using an internal light meter, where are you measuring light when taking a photograph? This is where the saying, “expose for the shadows, develop for the highlights” comes from.
2. Replace the camera battery. If you have automatic or manual, typically the camera just stops but maybe the battery is on it's last leg.
3. Something went wrong during processing. They likely needed more time in the developer. A reminder to be sure to track the temperature with film type and choose a processing time accordingly.
4. Developer is bad. Be sure to date everything after it's been mixed. Mix fresh as you go. Better to be sure than potentially ruining a batch of photographs.

### *NEGATIVES ARE TOO LIGHT*

1. Where are you measuring light when taking the photograph? Are you shooting outdoors in bright sun? Try 100ISO film and remember (or Google ;) ) the Sunny 16 rule; f16 @ 1/100 for 100ISO. Adjust to 1/500 for 400ISO
2. Did you go from 100ISO film to 400 and forget to adjust to the correct ISO on your camera? Setting the ISO helps the camera's light meter determine the right exposure.

3. Something went wrong during processing. They likely needed less time in the developer.

### *OTHER*

1. Light leak in camera or during loading. It looks like a white washed area on the film. You may notice a bit of it on the sprockets. Block the “back door” or suspected areas on your camera with opaque tape.
2. Half of the negatives are dark the other half is well exposed. This means there was not enough developer to cover the negatives. One roll will need 300ml-350ml from pre-wash to fix remover. Double that for two rolls.
3. Weird pattern at the top of your negatives = too much agitation. I watched a student aggressively shaking the tank in between rest periods. It created lots and lots of bubbles and subsequently created a bubble like pattern at the top of the negatives. Remember to be respectful and gentle.

All of these things happened to me at one point.  
I witnessed a few while teaching.  
I'm sure there is more that I missed.

It happens. It can be heartbreaking. Especially when you feel like you took an incredible photograph. The process requires a bit of acceptance for such things.

You are never completely in control. Life lesson?  
Most of the time, these surprises can be beautiful. If  
not, get out and try again. <3

# PERSONAL EXAMPLES



Ilford Delta 400 developed with Sprint at 68. The rest of the roll looks okay so likely an exposure, metering issue.



Ilford Delta 400 developed with Ilford at 68. Perfect example of a light leak. I opened my camera to load with film already inside. Kind of lovely though right?



Ilford Delta 400 developed with Ilford at 68. It was way too bright to be photographing with 400ISO film. I knew I was pushing it trying to get the light meter within range. 100ISO for bright sun!



Ilford Delta 400 developed with Sprint at 68. A happy exposure.

# A FEW FINAL THOUGHTS

1.

I made this zine because I love film and while we're at it, you. Whether you are a parent, student, mail carrier or none of the above, I hope this helps you. Special thanks to Emile Askey for offering insight on how to make this guide better.

2.

This is what I know and it isn't perfect. You should\* get great negatives most of the time. If you feel weird about using the kitchen sink, a laundry room (with a utility sink) or bathroom tub are both great options.

3.

I wanted to make this as economical as possible while sharing the process. Your setup might look different! Explore different developer options and find what works best for you. Think of what is available to you in the house. Speaking from personal experience, milk/water jugs do not work for fixer. It ate through the plastic and made a big ol' mess. Glass and airtight is best.

4.

Film makes me feel things when I think about environmental impact. Please be responsible with the chemistry and water usage. Without losing the process entirely, how as a community can we imagine something a bit kinder?

5.

I'd love to see how it goes, use the hashtag #kitchensinknegatives. Feedback is also welcome!



(And more of these because look at them.)



